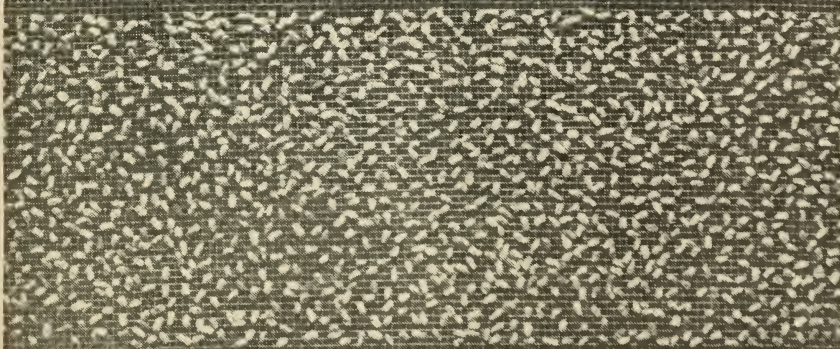


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COTTON GINNING  
FOR  
PURE-SEED  
PRESERVATION



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# COTTON GINNING FOR PURE-SEED PRESERVATION

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Ginning for pure-seed preservation is an important part of any cotton-improvement program, without which high-quality lint and pure-seed stock cannot be achieved or maintained in fullest measure. The farmer, therefore, should bring seed cotton of a single variety to the gin in the purest and best possible condition. However, it is the responsibility of the ginner to see that the quality of the lint is not lowered by improper ginning methods and that mixing of the seed is prevented so that the entire community may be better served.

When planning and erecting new cotton gins, it is relatively easy and economical to make provisions for keeping the seed pure, and it is also possible to modernize existing gins at reasonable expense to accomplish the same end. This leaflet points out the means by which the mixing of seed of different varieties of cotton can be prevented during the ginning processes, and also the precautions which must be taken at any gin to make it suitable for the preservation of seed purity.

## Preventing Mixing of Seed

Mixing of seed occurs either by mixing seed cotton or by mixing ginned seed, or both.

Precautions must be observed by the farmer to prevent the mixing of the different varieties in the wagons or motor trucks going to the gin, and to make sure that each load is not contaminated by locks, or portions of seed cotton, remaining from loads of other varieties. The careful cleaning of all sacks, storage houses, vehicles, and conveyors or handlers of the seed cotton from the field to the gin is necessary. At the gin, this involves the use of improved practices, up-to-date cleaning and extracting apparatus, suitable conditioning or drying processes, adequate ginning machinery, and means for handling seed in such a way that the purity of the seed will be effectively preserved. All of these contribute toward the final realization of the full benefits from planting improved seed stock.

A fundamental requirement for pure-seed preservation is that all pieces of equipment through which seed cotton passes shall be accessible to the ginner for inspection and cleaning. These are indicated in Table 1.

Quick accessibility must be provided within the driers; at the points of distribution and separation of the seed cotton from conveying currents of air; and within cleaners and feeders. Locks of cotton frequently hang up at the end of the distributors, across the bridges between the ginning units, in the screens of separators, in the screen of cleaners, and sometimes unexpectedly in the various passages of the driers and feeders.

TABLE 1.—*Guide for inspection and cleaning of cotton-ginning equipment.*

Sequence	Equipment	Place where cotton may accumulate
1.....	Cotton-suction telescope.....	Flexible joint.
2.....	Cotton drier.....	All passages.
3.....	Airline cleaner.....	Screens, bypass, valves, and outlet.
4.....	Cotton-suction piping.....	All valves and patches.
5.....	Suction separator, blow-box, or drop-per.	Screens and vacuum wheel.
6.....	Gravity cleaner.....	Inlet and outlet screens.
7.....	Overhead extractor.....	Main cylinders, strippers, and screens.
8.....	Distributor: belt conveyor or pneumatic.	Overflow end, bridges between chutes, change-bale valves, hanger tops, and pneumatic screens.
9.....	Gin-stand feeders.....	Screens and feeder rollers.
10.....	Gin stands.....	Seed roll, ribs, and breasts.
11.....	Seed-disposal system.....	Conveyor troughs, ends of chutes, vacuum wheels, hoppers, and elbows.
12.....	Wagon-loading seed bins, storage bins, etc.	Rough walls, corners, broken sections, cracks, etc.
13.....	Culling, grading, and seed-treating apparatus.	All points.

At any time during the ginning the condition of the seed cotton may be such as to cause accumulations of seed cotton. Hence it should never be assumed that any piece of equipment previously cleaned will remain so, but each part should be thoroughly examined at each inspection. By so doing, danger of the seed becoming mixed is greatly reduced.

At the seed-roll boxes of the gin stands, precautions must be taken to dump the roll and clean out all seeds before admitting new cotton. When the seed roll has been dumped and a new roll formed by the introduction of fresh cotton, points of possible mixing of seed may still exist between the gin stand and the final seed disposal. Screw seed conveyors frequently are means of contamination because they are difficult to thoroughly clean unless they have hinged bottoms on the trough. Belt or blow systems also may give trouble from time to time, if the apparatus permits the lodging of any stray seed, or if it fails to clean out the seed as rapidly as it is introduced into the system. Some blowpipe systems may be defective, even though they appear to be clean immediately beneath the gin, because deposits of seed can be built up at rough joints or in the elbows of the piping systems. Likewise, when fiber is present, seed tends to lodge in the rotary feeder or hoppers. In handling seed from the gin stand, various means may be employed, such as pneumatic piping, screw conveyors, belts, or gravity discharge. Some of these are largely self-cleaning, such as the blowpipe- and belt-type seed conveying systems; but others, such as screw conveyors, must be hand-cleaned between the ginning of different varieties. Regular or periodic inspection in all systems is desirable.

Figure 1 illustrates a number of places within the cotton gin where contamination of seed may occur, and these with other critical points listed above should be familiar to farmers, ginners, and gin owners.

### Typical Pure-Seed-Saving Systems at Gins

Several practical methods for handling seed to keep it pure are now in use, such as (a) self-cleaning belts, (b) self-cleaning blowpipe systems, (c) gravity chutes in two-story gins, and combinations of (a) and (b).



Self-cleaning belts may discharge into self-cleaning blowpipe systems; but screw conveyors in any part of a seed-handling system must be hand-cleaned between the ginning of different varieties of

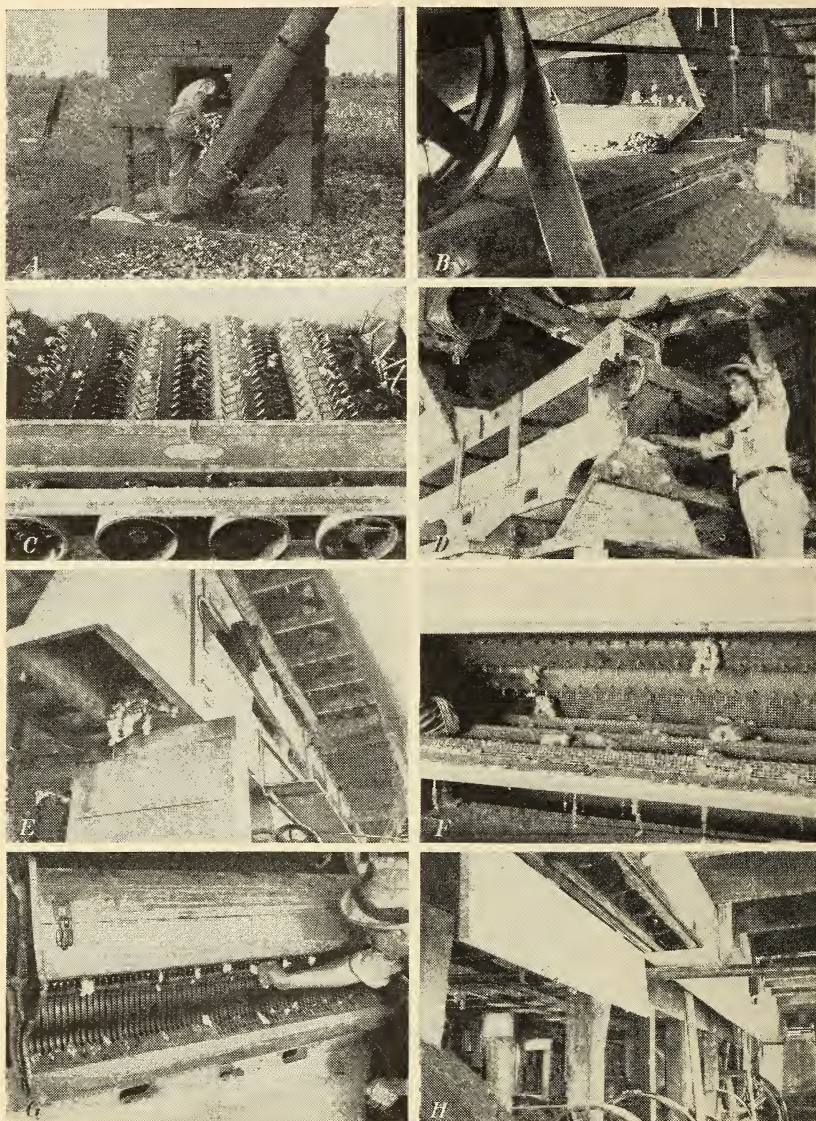


FIGURE 1.—Typical places in cotton-ginning establishments where seed purity may be endangered. *A*, In cotton drier; *B*, in the separator; *C*, within cleaners; *D*, at return bends of distributors; *E*, at overflow end of distributors; *F*, in cleaning feeders; *G*, at gin breasts; and *H*, in seed conveyors.

cotton, even though the conveyors discharge into a blowpipe. The first two self-cleaning methods are, therefore, preferable where an appreciable number of cleanings are required during the season.



The following systems now in use are considered to be dependable methods of preserving pure seed:

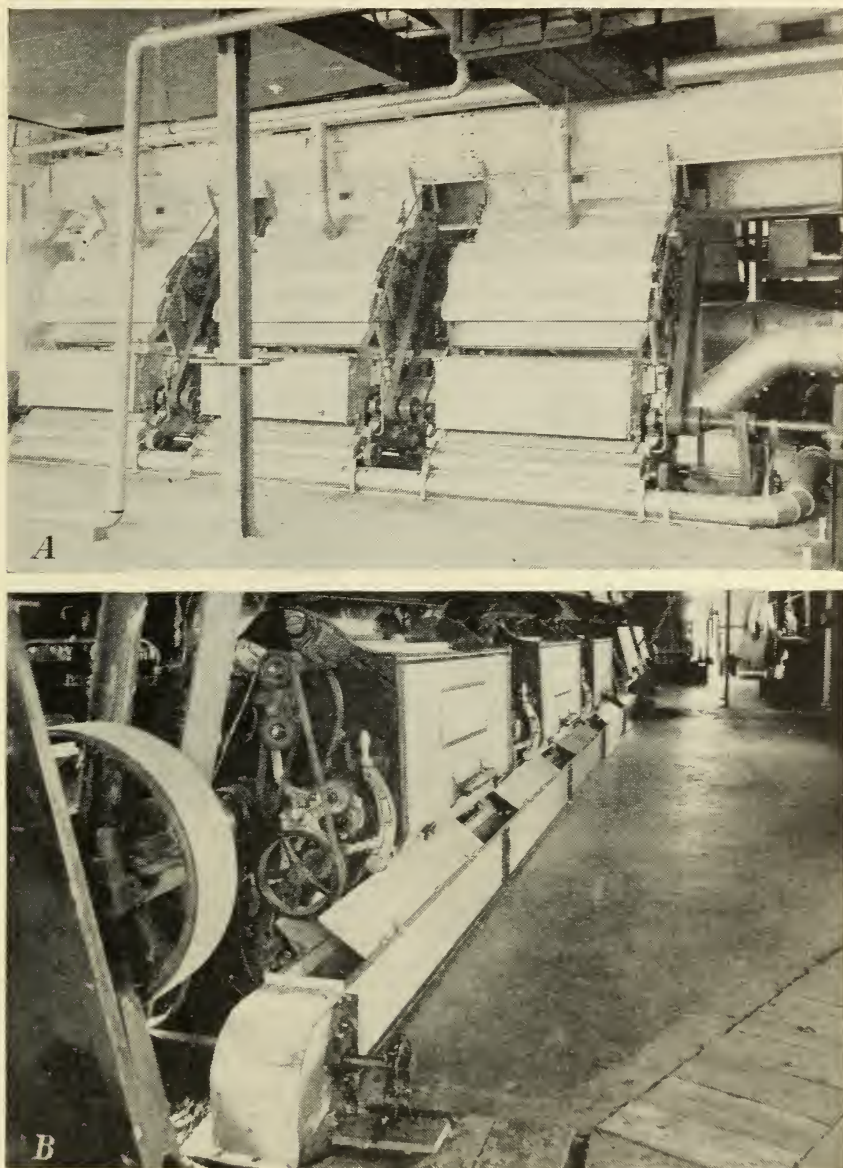


FIGURE 2.—A, Self-cleaning seed-handling blowpipe beneath gin stands; B, pure seed belt system to rotary feeder. Air pipe is not shown.

1. A horizontal flat seed belt in a smooth trough below the stands, delivering either to an inclined belt or to a seed-blowing pipe through a vacuum wheel seed feeder.

2. A reversible horizontal flat seed belt beneath the stands, operating in one direction to deliver gin-run seed, and in the other to deliver pure seed, each discharging into disposal apparatus by various means.

3. Two individual conveyors beneath the stands, gin-run seed being handled in the front system and pure seed in the rear one; or vice versa, each screw system having its own lifts and deliveries. The pure-seed system, of course is completely accessible for cleaning between runs.

4. In two-story gins, gravity chutes with hinged covers in front of or below each gin stand, diverting pure seed by gravity into funnels, sacks or belts below; a standard screw conveyor is generally used on gin-run seed.

5. Gravity chutes similar to those described above, short enough for single or two-story gins, delivering pure seed from each gin stand into a blowpipe by means of individual rotating vacuum-wheel seed feeders.

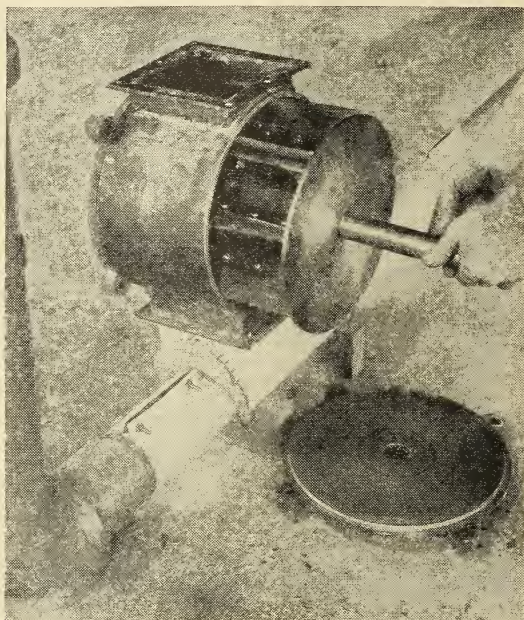


FIGURE 3.—Seed-feeding vacuum wheel for discharging seed into blowpipe systems.

When elevation of cotton seed is necessary, only the blowpipe or inclined-belt systems can be regarded as self-cleaning. Vertical screw and bucket-type elevators cannot be depended upon to be fully self-cleaning even when seed from several bales have been run through the system in an effort to clean it before commencing to save planting seed.

The general forms of belt and blowpipe systems now being installed at pure-seed gins are shown in figure 2. The belts are generally from 6 to 8 inches in width. They operate at linear speeds ranging from 150 to 250 feet per minute in either smooth wooden or steel boxes.

Conventional blowpipe systems beneath the gin stands use individual revolving vacuum wheels for each stand, somewhat similar to those illustrated in figure 3. In such systems it is necessary for the air velocity to be not less than 4,500 feet per minute for damp, wet, or heavy seed conditions, and the most economical pipe sizes are from 9 inches in diameter for three-stand outfits to 11 inches in diameter for five or more stands. Although such systems can be



provided with dust-laden air from the discharge of the gin cotton-suction fan, it is much more desirable to use a separate seed-blow fan in order to have clean air as an aid in obtaining clean seed and to economize in fan power.

Factory-built belt systems in steel boxes, with vacuum-wheel feeder and drives, cost from approximately \$300 for three-stand gins to \$400 for five-stand gins, exclusive of fans or blowpipes for conveying the seed away from the vacuum-wheel discharge. Factory-



FIGURE 4.—Gravity sacking-chutes in a two-story cotton gin for preserving purity of planting seed.

built blowpipe seed systems, with vacuum feeders under each stand, when installed at new gins sell for approximately \$30 per stand more than the price of the old-style seed-screw systems.

### Sacking and Seed Storage

Gravity chutes of the kind shown in figure 4 are used in two-story gins for seed sacking, while other arrangements, such as the inclined belt (fig. 5) provide both convenient sacking and blowpipe disposal in an effective manner. Change of direction in conveying seed with belts is not difficult, but requires separate belts for each change, so that one may discharge to the other. Sacking from blowpipes is accomplished most readily by use of a convenient cyclone separator.

If the seed are to be culled and graded or given chemical treatment it is seldom economical to do any sacking until these processes are performed unless the treatments are carried on concurrently with the ginning or the seed are not dry enough to keep in bulk without heating. Damp seed can generally be kept from heating when stored in bags and stacked in rows or on end.

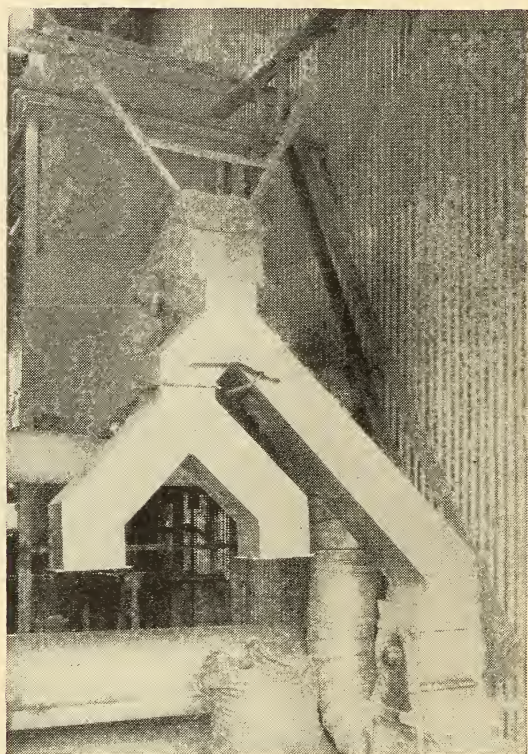


FIGURE 5.—Inclined seed belt to sacker on vacuum wheel and blowpipe on right.



